1982
ANNUAL SUMMARY
COOPERATIVE FOREST PEST ACTION PROGRAM

Prepared by

ALAN R. MILLER, FOREST ENTOMOLOGIST
S. CLARK HAYNES, FOREST PATHOLOGIST

GENERAL COMMENTS

HIGHLIGHTS

Gypsy moth caterpillars and egg masses are extremely abundant in Jefferson, Berkeley and Morgan Counties. Egg mass surveys that were conducted show that 250-2000 egg masses per acre are present in northern Berkeley and Morgan Counties. A suppression project is planned for 1983.

The looper complex in the Eastern Panhandle caused complete defoliation to 100,000 acres of forested land.

Aerial flights were conducted in eastern and southwestern West Virginia to detect the occurrence of oak wilt. All areas checked indicate the disease is not increasing and seems to be remaining stable.

Aerial flights were conducted over a 12-county area to spot and delimit oak wilt disease. No oak wilt trees were found in the twelve county area. The same areas will be flown in 1983.

The beech bark disease is causing death of beech trees in the Gaudineer Mountain area of the Monongahela National Forest.

The periodical cicada Brood V occurred throughout central and northern West Virginia.

The eastern tent caterpillar populations collapsed in central and southern West Virginia. Populations remain high in the Eastern Panhandle.

The pinewood nematode is known to occur in 13 of West Virginia's 55 counties.

The year 1982 seemed to be one that had fewer specimens reported and no major insects or diseases were found to be causing any major problems. I guess you could call 1982 a quiet or low-problem year.

PEST IDENTIFICATION LABORATORY

The following chart provides information on the number of specimens submitted and the telephone calls that were received in 1982 (January-December).

Month	Telephone Calls	Submitted Specimens
January	163	14
February	153	12
March	251	28
April	406	45
May	628	96
June	503	114
July	479	123
August	433	81
September	375	83
October	234	43
November	165	36
December	149	13
Total	3939	688

Telephone calls in order of most abundant (top ten).

1.	Vertebrates**	383
2.	Cicada	200
3.	Bees/Wasps/Hornets	106
4.	Fleas	97
5.	Garden Insects	90
6.	Ants	75
7.	Wood Borers	69
8.	Grasshoppers	60
9.	Pantry Pests	53
10.	Aphids	49
	Total	1182*

** The vertebrate calls included the following: Moles 133; Birds 54; Snakes 52; Bats 37; Rodents 25; Chipmunks 22; Rabbits 15; Squirrels 8; and the remaining included cats, deer, groundhops, lizards, opossum, skunk, and vole.

* There were an additional 2757 calls dealing with problems such as: when to plant grass, trees, shrubs; when to prune; what to spray; what chemical to use; what fertilizers; where to buy certain products; what kind of plant, etc.

FOREST INSECTS

Each year we look for major insects that may cause damage to the forests of West Virginia. In 1982 many of the normally major defoliators were not present or caused little damage.

The forest tent caterpiller, Malacosoma disstria, was found in the looper complex that occurred in the Eastern Panhandle, however, it was not in large numbers to cause defoliation on its own. The insect was found in other areas of the state but did not cause any damage.

The eastern tent caterpillar, Malacosoma americana, populations collapsed in central and southern West Virginia. However, the Eastern Panhandle had numerous populations and the insect is not expected to collapse until 1984.

The eastern tent caterpillar seems to be abundant for about 5 years and then collapses due to polyhedrosus virus and tachinid flies. The virus can be found naturally in the populations and after several years it is a major factor in the decline of the insect. The tachinid fly (large black docile fly) deposits its eggs on the larvae of the caterpillar and helps in reducing populations. The flies in the year after population collapse are many times a nuisance to humans. They are harmless and should cause no concern.

Fall webworm (Hyphantria cunea). This insect seems to have one or two years of heavy populations and then complete collapse occurs for 7 to 8 years before they again become numerous. The insect was abundant in mid 70's in the Northern Panhandle and shortly thereafter could not be found. The insect appears to be building in 1982 and in 1983 the Northern Panhandle could have heavy populations. The fall webworm can normally be found throughout the state in late summer and will attack most hardwoods. Control efforts are normally not pursued because the insect defoliates the trees when most of the growth of trees has ceased and the normal leaf fall is about to occur.

Fall cankerworm (Alsophila pometaria). We have observed this insect for many years and surveys have been conducted to delimit or check for the occurrence of the cankerworm in several areas of the state. The fall cankerworm could be found in the looper complex, but not in large numbers. No area in the state had any noticeable defoliation by this insect. We expect a build-up of the insect in the Harman-Middle Mountain area of Randolph County for 1983.

Walking stick (Diapheromera femorata). This insect had been (1978-79) a major defoliator of hardwoods in the Eastern Panhandle, but few specimens were noted in 1982. Research efforts on this insect by USDA have been suspended until major infestations are again noted.

White pine bark aphid (Pineus strobi). This insect attacks white pine and many times the insects are abundant enough to cause the trunk of the tree to appear as if it is white-washed. An abundance of these insects on white pine can cause the needles to appear yellowish and sickly looking. This insect seems to be increasing statewide and is causing damage to white pine in the Ohio Valley region.

Pine spittle bug (Aphrophora parallela). This insect has been given little attention by most of the Christmas tree growers in West Virginia. However, during 1982 many trees were observed to be dying or dead and death was attributed to spittle bug infestation that had persisted for several years. A recent publication on spittle bug indicates that a tree can die in one to three years if feeding persists. This insect is one that will be worth watching and controlling in future years.

Oak leaf tier (Croesia albicomana). Egg mass surveys were conducted in 1982 to check for occurrence of and delimit the areas of expected infestation. The surveys indicated the insect would not be a problem in 1982 and few eggs were found. The general area over which the tier occurs has not changed. (Generally Pocahontas County). The insect will be monitored in 1983 because this insect and related species are capable of causing heavy defoliation to hardwoods in West Virginia.

Scarlet oak sawfly (Caliroa quercuscoccineae). This insect was at one time abundant in southern West Virginia and caused much concern with landowners that had forested tracts of land. No areas were found in 1982 to be infested with this insect.

Southern pine beetle (Dendroctonus frontalis). This insect has never really been a major threat to West Virginia due to the fact that large continuous stands of hard pine are not known to occur in West Virginia. Small stands have been lost to this insect in past years. No specimens of the southern pine beetle were submitted in 1982.

Locust leaf miner (Xenochalepus dorsalis). The leaf miner is increasing in the Eastern Panhandle and the Greenbrier Valley areas of West Virginia. The insect is also fairly common in the higher elevations of Pendleton, Pocahontas, Randolph and Webster Counties. The insect has subsided in southern West Virginia where it was prevalent for at least 20 years. The leaf miner caused the black locust leaves to turn brown and the trees appear to have a blight. The trees leaf out next year and appear healthy until about the first of August when the damage again is noticeable.

LOOPER COMPLEX

The looper complex is made up of Geometrids, commonly called measuring worms or inch worms. The infestation by the loopers caused more defoliation to hardwoods in one year than all defoliators have in the past 20 years. To date the loopers have been the most destructive insect that West Virginia has experienced in modern times.

In 1981 approximately one million acres of hardwood forests were completely defoliated in the Eastern Panhandle. Additionally, in 1981, 500,000 acres of hardwoods were defoliated in southwestern West Virginia.

In 1982 the loopers could not be found in southwestern West Virginia, but in the Eastern Panhandle 100,000 acres were completely defoliated and the loopers caused light to moderate defoliation to over one million acres of hardwood forests.

During these two years the defoliation did not take place on the high mountain ridges but stayed on the slopes, valleys and ridges of lower mountains.

The insects causing this damage in order of abundance were: half-winged geometer, Philgalia titea; Linden looper, Erannis tilliaris; Underwing moth, Catacola sp.; Forest tent caterpillar, Malacosoma disstria; a number of unidentified leaf rollers and fall cankerworms, Alsophila pometaria.

By the fall of 1982 numerous reports were being received that white oak and hickories were dying in the areas defoliated by the loopers. We will conduct surveys in 1983 to see if mortality has taken place and also record any defoliation that may occur.

Also during 1982 numerous parasite flies (tachinid) and predaceous beetles (Calasoma sp.) were noted. This means the populations are on their way to a general collapse. We will monitor in 1983 and see if our predictions are correct.

It is worthy to note that none of the defoliation in 1982 was due to Gypsy Moth that is also prevalent in the area. We do expect the gypsy moth to cause defoliation in 1983.

The major defoliation by the loopers for the past two years 1981-82 has occurred in Berkeley, Morgan, Hampshire, Hardy, Mineral and Grant Counties.

Elk leaf beetle (Pyrrhalta luteola) and larger elm leaf beetle (Monocesti coryli). These insects were not as abundant in 1982 as in 1981. They could be found on elms throughout the state but damage was hardly noticeable.

Sycamore lacebug (Corythucha ciliata). The lacebug caused damage to sycamore throughout the state but did not appear to be as abundant as in 1981. The leaves of sycamore will turn a bronze color in late August when fed upon by the lacebug. Many sycamore trees appear to be on the verge of death due to anthracnose and lacebug damage that occurred in 1981 and 1982.

Periodical cicada (17 year locust) (Magicicada septendecim). Brood V of the periodical cicada appeared on time in West Virginia this year. This brood covers more of West Virginia than the other broods and was found in the following locations. (See Map 1).

Many trees were affected by the egg-laying habits of the female and this damage will be noted for many years. It was noted in October-December Newsletter that yellow-poplar and magnolia trees did not seem to be affected by the egg-laying habits of the female. This was thought to be due to heavy branches of yellow poplar and magnolia. However, further observations show the female will lay eggs on these branches and seldom do the branches die as in the other species of hardwoods. This is probably due to the size of branches and the food supply of branch is not affected.

GYPSY MOTH

Gypsy Moth (Lymantria dispar). The Gypsy Moth continues to move relentlessly southward and westward. In 1982 the gypsy moth defoliated 8,171,191 acres in the northeast. This is a decrease of 4,701,634 acres from 1981. Increased suppression projects, parasites, predators and natural collapse contributed to the decrease.

West Virginia has not experienced defoliation by the moth but it will not be long before we can report acres of defoliation.

Burlap Banding for Gypsy Moth. Burlap bands are placed on host trees to detect for the gypsy moth caterpillars. In West Virginia we have been using surplus parachutes (cargo chutes made of cotton) to band trees. These parachutes have separate panels and are easy to cut into strips for use as a band

around trees. In 1981 caterpillars were found generally in northern parts of Morgan, Berkeley and Jefferson Counties. In 1982 the larvae were so numerous attempts were not made to make a count. Generally the Counties of Morgan, Jefferson and Berkeley are heavily infested. Larvae of the gypsy moth were found for the first time in Hampshire and Mineral Counties. The areas of larval finds were: Fort Ashby and Patterson Creek in Mineral County, and Bloomery, Springfield, Grace, Capon Bridge, and Ridge Road in Hampshire County.

Gypsy Moth Pheromone Trapping Program. Approximately 3,000 pheromone traps were placed throughout West Virginia. Cutbacks in funds and the loss of APHIS money or personnel, the state was trapped on a random method. The only county with a grid pattern was Preston where APHIS personnel assisted. The remainder of the state was trapped with the assistance of West Virginia Department of Natural Resources Forestry Division, West Virginia State Parks, and Wildlife Division. Additionally, traps were placed by WVDA personnel in selected areas.

When the traps were recovered and the number of male moths counted, a total of 6,692 had been found in 24 counties. Eight (8) new county records were recorded and are: Doddridge 1; Mason 1; Mercer 3; Nicholas 1; Ritchie 1; Tyler 1; Upshur 7; and Webster 3. The other counties recording catches were: Barbour 1; Brooke 23; Grant 217; Hampshire 3,586; Hancock 15; Hardy 656; Lewis 1; Marshall 14; Mineral 1,602; Monongalia 22; Ohio 13; Pendleton 24; Preston 500; Randolph 1; Tucker 1; and Wetzel 1. The number of male moths caught in the heavily infested areas of Berkeley, Jefferson and Morgan are respectively, 6974, 6314, and 4585. These three counties are not included in the total.

Egg Mass Survey for Gypsy Moth. Egg mass surveys were conducted in early 1982 and few were found. However, by fall of 1982 the number of egg masses found in Berkeley and Morgan Counties indicated a suppression program should be initiated. Preliminary surveys show that 13,000 acres of forest land should be treated to retard the movement of the gypsy moth. Additionally, egg masses were found in northern parts of Hampshire and Mineral Counties, but these finds do not warrant an abatement program.

During 1982 a policy statement regarding gypsy moth was prepared and is available from WVDA.

Also, a Gypsy Moth Advisory Council was formed and is active in gypsy moth operations.

All gypsy moth egg masses that were examined contained the parasitic wasp Ooencyrtus kuvanae. This parasite seems to stay up with advancing populations of the gypsy moth and is responsible for helping reduce populations.

WOOD BORERS

With the increased use of wood as a supplement fuel and the building of log homes comes the increased reports of wood boring insects being found. The more common borers submitted were: painted hickory borer, old house borer, powder post beetles, carpenter bees, and carpenter ants. The rhododendron borer, bronze birch borer, and dogwood borer were other common insects affecting host plants. The bronze birch borer has caused extensive damage to white birch and recommendations are to plant resistant birch trees.

LEAF MINERS

Other than the locust leaf miner affecting black locust trees, the other trees affected by leafminers were the oaks, holly, boxwood and arborvitae. Damage to other species of trees were of little or no consequence.

APHIDS

Aphids continue to be plentiful and attack many species of plants. Generally the aphids are restricted to a specific area and can be found causing damage to individual plants. Generally the most common aphid to be reported was the pine bark aphid Pineus strobi on white pine. Others included the Giant Willow aphid, Hickory Gall aphid, Wooly Alder aphid, and unidentified aphids on Red and Scotch pine.

The spruce gall aphid and cooley spruce gall aphid continue to be problems on Norway Spruce and Blue Spruce, respectively.

SCALE INSECTS

Scale insects were numerous this year and the following are some of the major ones reported: Pine needle scale, white peach scale, Euronymus scale, obscure scale, oystershell scale, San Jose scale, Magnolia scale, tuliptree scale, Pine tortoise scale and Azalea bark scale. The cottony maple scale and cottony maple leaf scale were not as abundant as in past year.

OTHERS

Gall insects were common and included: Maple spindle gall, Maple bladder gall, Wool sower gall, Pine needle midge, Hickory leaf gall, and the Horned oak gall.

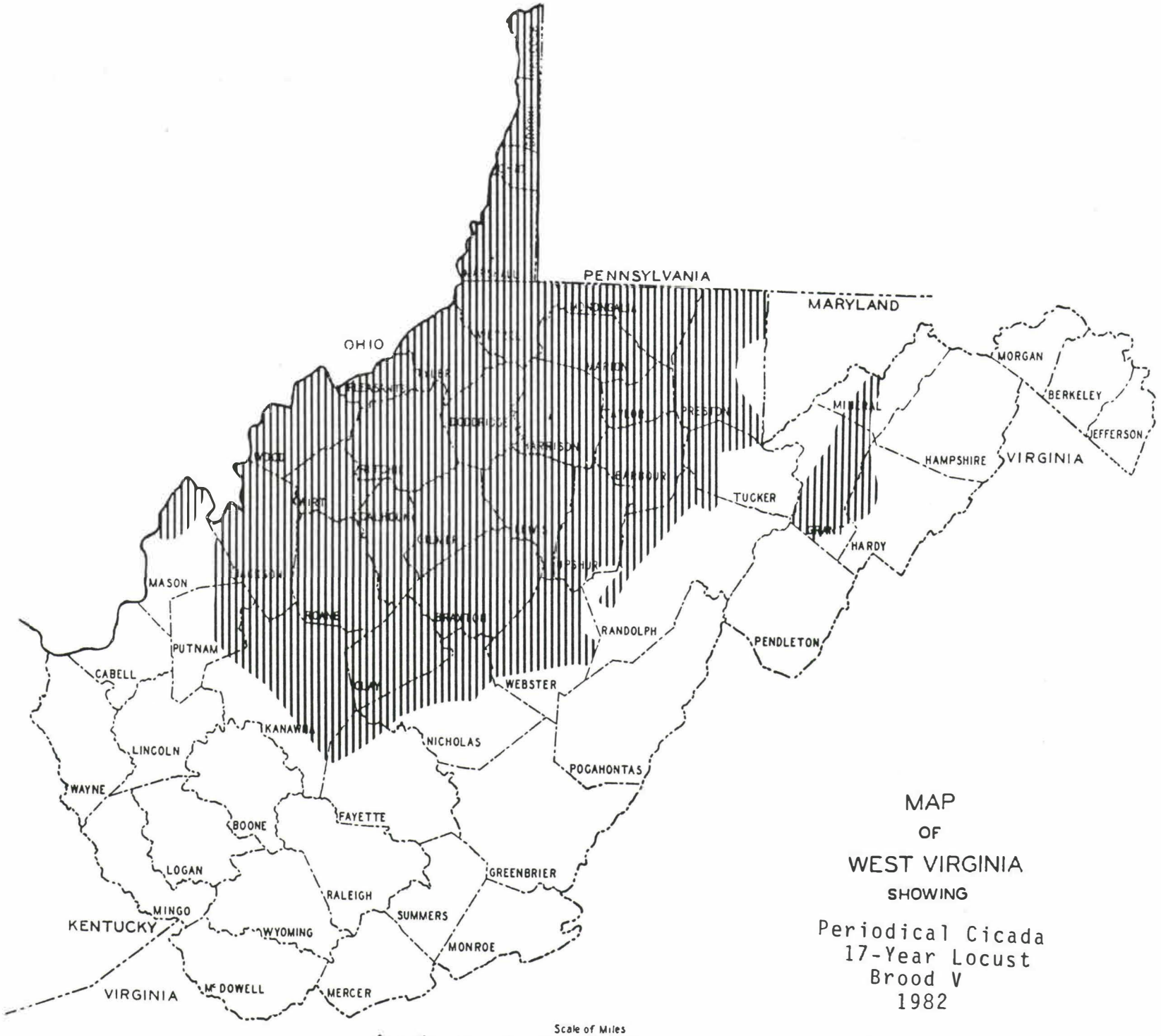
The pine webworm, Tetralophs robustella, on Scotch pine in Wood County.

The orange striped oakworm, Anisota senatoria, found on oaks in Fayette County and on Chinese chestnut in Doddridge County.

The yellow necked caterpillar, Datana ministra, found on white birch in Pocahontas County.

The white marked tussock moth, Hemerocampa leucostigma, on apple in Jackson County.

The white pine weevil, Pissodes strobi, causing moderate damage to white pine Christmas tree plantation in Hampshire County.



MAP
OF
WEST VIRGINIA
SHOWING

Periodical Cicada
17-Year Locust
Brood V
1982

Map No. .1

PATHOLOGY SECTION

HARDWOOD DISEASE PROBLEMS

Dutch elm disease, Ceratocystis ulmi, was a serious disease problem in West Virginia in 1982. Diseased trees were observed throughout the state with the heaviest concentration occurring in the major river drainages. Sanitation and insecticide sprays were the primary control procedures recommended. In certain cases the pressure injection of fungistatic chemicals was recommended.

Fire blight, Erwinia amylovora, was observed causing branch mortality on apples, pears and other members of the Rosaceae family. Several specimens were submitted to the Pest Identification Laboratory. Control recommendations included pruning out and destroying diseased branches.

Anthracnose of hardwoods, Gnomonia sp., and Gloeosporium sp. incidence was generally light this year. Sycamore anthracnose caused by the fungus Gnomonia platani, was virtually non-existant. The dry spring we encountered probably affected disease incidence. Norway maple anthracnose caused by the fungus Gloeosporium apocryptum caused moderate defoliation on Norway maples in the Kanawha and Ohio Valleys.

Phyllosticta leaf spot, Phyllosticta minima, was observed on red and sugar maple foliage throughout the state. Few, if any, problems are expected.

Bullseye leaf spot, Cristulariella pyramidalis, was light to moderate this year on maples, ash and other hardwoods. Most trees suffered only light defoliation as a result of infection.

Actinopelte leaf spot, Actinopelte dryina, was observed on pin oak and red oak scattered throughout much of the state. As a rule the disease is usually only found in the late summer on a few trees at any one location.

Beech bark disease complex, Cryptococcus fagisuga and Nectria galligena, was found at the Gaudineer Scenic Area in the Monongahela National Forest in 1981. The classical beech bark disease fungus, Nectria coccinea var. faginata has not been found to date. However, Nectria galligena, a microscopically identical species, was found in association with the dead and dying trees in two separate areas on the forest. An impact study conducted in the most affected area revealed that per acre losses totaled 1,369 Bf/acre of saw timber and 2.67 cords/acre of pulpwood. Potentially 5,697 Bf/acre beech saw timber and 929 cords/acre of beech pulpwood could be lost.

The present value of beech saw timber and cord wood in West Virginia is $40.00 MBF and $12.00/cord. Therefore, the present value of timber that has been lost at the scenic area is $87.00/acre. Potential losses could be as high as $252.00/acre at present market value.

Oak mortality, a stress related disease, has been observed in several sections of the state. Late spring frosts, drought and insect defoliation all act as predisposing factors for this problem. Regardless of which factors

are involved, the trees, both red and white oaks, are eventually attacked and killed by the root rot pathogen, Armillaria mellea, the two-lined chestnut borer, Agrilus bilineatus, or both.

Nearly 200 acres of oak timber were found either dead or dying on Briery Knob in Pocahontas County. This stand of timber had been in a state of decline for over three years. It was speculated that insect defoliation had predisposed the timber to attack by the above mentioned insect and fungal pathogen. Smaller stands of oak timber in Raleigh County are beginning to show signs of oak mortality. Insect defoliation appears to be the predisposing factor in this case also.

Maple decline, a stress related disease syndrome, has been noted in urban areas as well as in forests and sugar bush orchards. Symptomatic trees develop a stag-headed appearance, while declining and dying over a period of years.

Several theories have been advanced to explain why maples begin to decline. Woodland sugar maples decline as a result of repeated defoliation by insects and drought. Sugar bush trees are thought to decline from insect defoliation, drought, overtapping and soil compaction. While urban maple tree decline is thought to be spurred on by drought, roadside salts and root disturbances or compaction. Once stressed, secondary organisms such as Armillaria mellea and Steganosporium sp. invade the tree causing further decline and death.

Nectria canker, Nectria galligena, is a common disease problem throughout West Virginia on nearly all hardwood trees. This disease appears to be particularly severe on birch, sassafras and trees that occur or are planted on poor site locations.

Slime flux, Erwinia nimipressuralis, is a common shade tree disease problem. Although this disease most commonly occurs on elms, other trees such as oak and maples have been observed with slime flux infections.

Dothichiza canker, Dothichiza populea, is undoubtedly the most serious disease known to occur on Lombardy poplar. Most Lombardy poplars become diseased before they are 15 years old. They generally die within a few years of becoming infected.

Pin oak blight, Endothia gyrosa, was first observed in the Kanawha Valley in 1979. Subsequent surveys have revealed that the disease is not spreading or causing any appreciable damage. Only one or two branches on any given tree appear to be infected.

Cedar-apple rust, Gymnosporangium juniperi-virginianae, incidence was not nearly as heavy in 1982 as it was in 1981. The dry spring that occurred was not conducive to infection.

CONIFER DISEASE PROBLEMS

Armillariella root rot, Armillariella mellea, can be a serious malady in conifer plantations. This pathogen is capable of being a primary pathogen on conifers. During 1982 Armillariella root rot was observed in one white and red pine planting in Greenbrier County.

Cylindrocladium root rot, Cylindrocladium sp., is a perennial problem at the Parsons Forest Seedling Nursery. Disease incidence was much lower in 1982 than it has been in previous years. The decrease in disease incidence was at least in part due to the cool dry conditions experienced during the spring.

Phytophthora root rot, Phytophthora cinnamomi, has been found causing mortality in five Christmas tree plantations, one forest seedling nursery, and one ornamental nursery in the state. Fraser fir is very susceptible to this disease problem. However, the pathogen has also been isolated from dead and dying white fir, Douglas-fir, red pine and rhododendron. Efforts will continue to survey for the problem. Christmas tree growers and nurserymen who have experienced mortality in their Fraser fir plantings have been contacted regarding potential chemical controls for the problem.

White pine root decline, Verticicladiella procera, continues to be a serious problem in many white pine plantations. During 1982 conifer stand surveys, the disease was observed in several natural white pine stands in Greenbrier County as well as in one Christmas tree plantation in Calhoun County.

Red root rot, Inonotus tomentosus, (Polyporous tomentosus), was discovered in 1982 in the Rothkugil larch and spruce plantation in Pocahontas County. The fungus was found fruiting at the base of a Norway spruce tree. According to department records, this represents the first time this pathogen has been found in West Virginia. This pathogen causes a white pocket rot of conifer trees with the decay extending as high as 10 feet above the ground.

Red ring rot, Phellinus pini, (Fomes pini), was observed causing extensive decay problems on red spruce in the Gaudineer Scenic Area. A number of the large old virgin trees are dead and dying. The perennial conks vary in shape and size and have been observed on many of the dead and dying trees. This organism causes a white pocket rot.

Cytospora canker, Cytospora kunzei, has been observed causing branch mortality on Colorado blue spruce and Norway spruce throughout the state. Main stem cankers have also been observed on some Norway spruce. This disease generally only occurs on isolated trees at any one location.

Atropellis canker, Atropellis tingens, has been observed in several Scotch and Austrian pine plantations. Cankers have only been observed on the smaller branches. No main stem cankers have been noted.

Hemlock canker continues to be a serious problem in some hemlock plantings in West Virginia. The dying plants exhibited resinosus near the ground line where the cankers occurred. Affected trees appeared off-color. Numerous dead and dying branches were present.

Pine pruning fungus, Cenangium sp., surveys to determine the prevalence of this pathogen in white pine stands. During the winter of 1979 and 1980 extensive branch mortality and die-back was noted on suppressed trees in Raleigh, Greenbrier, and Mercer Counties. Since that time the disease has been observed causing only very light branch mortality problems to white pines in several counties.

Diplodia tip blight, Diplodia pini, has been noted throughout the state causing branch tip mortality. Austrian, Scotch, red, pitch, and table mountain pine are all known hosts for this disease.

Lophodermium needlecast, Lophodermium pinastri, incidence was very low in Scotch pine Christmas tree plantations in 1982. Christmas tree growers are much more aware of this problem now and are maintaining their plantations better. At the Parsons Forest Seedling Nursery, two beds of red pine seedlings suffered extensive damage due to Lophodermium needlecast. Preventative fungicide treatments had not been applied during the late summer and fall of 1981. The seedlings appeared brown and dead during the early spring of 1982 but most of them lived and grew during the summer of 1982. Protective fungicide sprays were applied during the late summer and fall of 1982.

Naemacyclus needlecast, Naemacyclus minor, is a very common disease in West Virginia Scotch pine Christmas tree plantings. It was observed causing problems in Roane, Calhoun, Pocahontas, Mason, and Barbour Counties. Infected trees may be rendered unsalable because of thin crowns.

Swiss needlecast, Phaeocryptopus gaumanni, is known to occur in a number of Douglas fir plantations. Symptomatic trees appear chlorotic and are usually rendered unsalable. To date the disease has been reported in Hampshire, Mingo, Raleigh, Mercer, Greenbrier, and Barbour Counties.

Rhizosphaera needlecast, Rhizosphaera kalkhoffi, has been observed in Colorado blue spruce plantings in Morgan, Marion, Kanawha and Raleigh Counties. Infection occurs in May and June. Symptoms appear in the late fall and early spring when black fungal fruiting bodies appear in the stomata.

Pinewood nematode, Bursaphlenchus xylophilus, is known to occur in 13 of West Virginia's 55 counties. Two new counties, Berkeley and Roane, were added to the list this year. The pinewood nematode has been isolated from four species of pine in West Virginia. These include Austrian, Scotch, white, and red pine. Surveys will be continued to determine the range of this pathogen.

ABIOTIC FACTORS

Scorch

Sun scorch symptoms were evident on recently planted maple and dogwood trees in July and August after several weeks of hot dry weather. Some trees suffered extensive damage while others only suffered very light damage. Recently planted trees should be watered during hot dry periods.

Air Pollution

Air pollution damage appeared to be very light this year. Oxidant pollution damage was evident only on an occasional white pine tree in the eastern and southern sections of the state.

Salt

Deicing salt damage to ornamentals is a common malady throughout the state. During severe winters the application of deicing salt increases. Maples, dogwoods, hemlocks, and white pines are the most seriously affected species.

Herbicide Damage

Each year more and more reports are received regarding herbicide damage to ornamentals. Frequently the herbicides have been applied in an improper fashion. However, vandalism involving herbicides is also becoming a problem. Hopefully through education this problem can be corrected.

PROJECTS

Chestnut Blight (Endothia parasitica)

The West Virginia Department of Agriculture chestnut blight project is an effort to develop blight resistant trees through a selective breeding program. Existing American chestnut trees displaying blight resistance have been employed in the program. Efforts are being made to propagate resistant American chestnut through grafting.

Other areas of work include assisting researchers from WVU and other institutions with the maintenance and evaluation of hypovirulence spread plots. These studies are long term in nature. Hopefully, when completed, we will be able to more fully understand the nature of hypovirulence and its potential uses as a chestnut blight control agent.

White Pine Blister Rust

Surveys were performed on 23,785 acres.

A total of 1,164 acres of white pine and new control area was added.

11,780 acres of the control area was set aside as needing "No Further Work".

Suppression work was completed on 3,740 acres, with 12,625 Ribes destroyed.

Status of Control

(State and Private)

White Pine	Control Area	On Maintenance	No Further Work
228,508 A.	416,776 A.	416,776 A.	405,383 A.

(Federal Land)

86,920 A.	144,503 A.	144,503 A.	144,503 A.	
315,428 A.	561,279 A.	561,279 A.	549,886 A.	Totals

Oak Wilt Detection (Ceratocystis fagacearum)

Sixteen high oak wilt disease incidence quadrangles in the Eastern Panhandle and 20 high disease incidence quadrangles in the southwestern section of West Virginia were flown during the summer. Symptomatic trees were marked on quad maps. Disease incidence appeared to increase slightly over last year. In addition, the following low incidence counties were flown: Randolph, Barbour, Upshur, Nicholas, Pocahontas, Monongalia, Preston, Marion, Taylor and Harrison. No suspect trees were observed in the low disease incidence counties. In past years, suspect trees spotted in low incidence counties were plotted on maps and ground crews investigated to determine if the trees actually did die of oak wilt.

A joint survey with the USFS was conducted in the Eastern Panhandle to investigate oak wilt incidence on ten-year old infection centers. A total of 41 infection centers were located. Dead, dying or actively wilting trees were found in 27 of the 41 centers. Oak wilt progressed at the rate of .39 diseased trees per center per year. Total basal area and the basal area of oak were affected very little by disease incidence.